# ENERGY DEPARTMENT

## *Small Business Innovation Research and Small Business Technology Transfer*

**SWIFT Tour**
**September 11-14, 2006**

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Economic Development Manager
Oak Ridge National Laboratory

# PROGRAM FEATURES

- GRANTS
- Annual Solicitation (Fall)
- $100K Phase I (9 months)
- $750K Phase II (24 months)
- Apply to both programs with one application
- Electronic applications only (Grants.gov)
- Must be awarded Phase I from DOE to compete in Phase II
- SBIR:  PI must be employed by small business
- STTR:  PI may be employed by either small business or research partner

# SOLICITATION SCHEDULE
# RELEASE AND CLOSING DATES

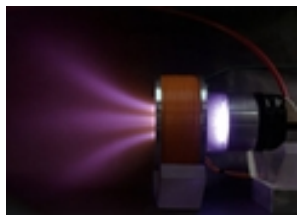
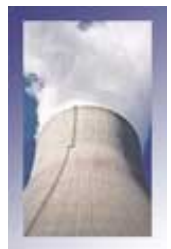
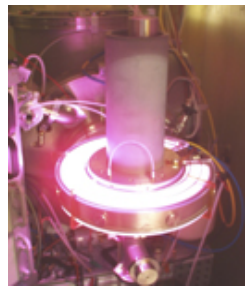
| | SBIR | STTR |
|---|---|---|
| **FY 2007 Solicitation** | | |
| Release Date | September 2006 | |
| Closing Date | December 2006 | |
| Phase I Award Selection | mid April 2007 | |
| Phase I Grants Begin | late June 2007 | |

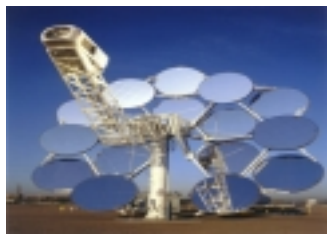
# SBIR/STTR BUDGET/AWARDS FY 2006

| | SBIR | STTR |
|---|---|---|
| **FY 2006 Budget** | **$104.2M** | **$12.5M** |
| | **(2.5%)** | **(0.30%)** |
| **Award Selections** | | |
| **Phase I** | **262 ($ 100K)** | **29 ($ 100K)** |
| **Phase II** | **~135 ($ 750K)** | **~11 ($ 750K)** |

# PARTICIPATING RESEARCH PROGRAMS

- Office of Science
  - Biological and Environmental Research
  - Basic Energy Sciences
  - Fusion Energy Sciences
  - High Energy Physics
  - Advanced Scientific Computing Research
  - Nuclear Physics
- Defense Nuclear Nonproliferation
- Electricity Delivery and Energy Reliability
- Environmental Management
- Fossil Energy
- Nuclear Energy
- Energy Efficiency and Renewable Energy



# SBIR/STTR FY 2006
# TECHNICAL TOPICS

**Defense Nuclear Nonproliferation ($4.1 M)**

1. Research to Support Proliferation Detection
2. Research to Support Nuclear Explosion Monitoring

**Electricity Delivery and Energy Reliability ($2.6M)**

3. Second Generation, High Temperature Superconducting Coated Conductors
4. Cryogenic Technology for Superconductors
5. Electric Transmission and Distribution Technologies

**Environmental Management ($1.5M)** **[R&D BUDGET CUT IN FY07]**

6. Decontamination and Decommissioning of Facilities in the DOE Complex

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Biological and Environmental Research ($15.8 M)**

**(FY07 – Life Sciences UP; Medical Sciences DOWN)**

7. Measurement/Monitoring and Characterization Technologies for the Subsurface Environment
8. Genomes to Life and Related Biotechnologies
9. Atmospheric Measurement Technology
10. Medical Sciences
11. Carbon Cycle Measurements of the Atmosphere and the Biosphere
12. Biological Solutions for Reducing Atmospheric Carbon Dioxide and for Producing Fuels

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Fossil Energy ($11 M)** **[Oil and Gas to be cut in FY07; Coal UP]**

13. Capture and Sequestration of Carbon
14. Environmental Technology Innovations and Controls for Fossil Energy Facilities
15. Solid Oxide Fuel Cell (SOFC) Balance-of-Plant (BOP)
16. Coal Gasification and Combustion Technologies
17. Oil and Natural Gas Technologies

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Basic Energy Sciences ($24.3 M)**

18. Advanced Fossil Fuels Research
19. Technologies Related to Energy Storage for Electric and Hybrid Vehicles
20. Manufacturing for the Hydrogen Economy
21. Separations Technologies
22. Nanotechnology
23. Chemical Reactions
24. Solid-State Light Emitting Diodes for General Illumination
25. Neutron, Electron, and Photon Beam Instrumentation
26. Materials for Advanced Nuclear Energy Systems

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Nuclear Energy ($2.3 M)**

27. Advanced Technologies for Nuclear Energy

**Energy Efficiency and Renewable Energy ($14.3 M)**

**Note: FY07 Solar and Biomass IN (geothermal/hydropower OUT)**

28. Advanced Materials for New Energy Carriers, Services, and Products

- a. Advanced Materials for Hydrogen Storage (14)
- b. Thermoelectric Materials for Recovery of Waste Heat from Industrial Streams (17)
- c. Seals for High Temperature Applications (6)
- d. Improved Oxide Ceramic Matrix Composite Development for Industrial and Gas Turbines (11)

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

29. Advanced Materials for Lightweight Vehicles

- a. Cost-Effective Coating Systems for Corrosion Protection of Mg Alloys in Automotive and Truck Applications (16)
- b. Architecturally-Improved Ultra-Light Powertrain Concepts for Internal Combustion Engines (13)
- c. Recycling Automotive and Truck Materials (7)
- d. On-Line/Real-Time Nondestructive Evaluation of Vehicle Components (14)

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

30. Advanced Materials for Process Technologies

- a. Advanced Bio-Based Materials and Bioproducts (11)
- b. Wind Turbine Materials for Extreme Environments (14)
- c. Renewable Energy and Production of Fresh Water (16)
- d. Natural Gas Alternatives for Manufacturing (8)

31. Renewable Energy Sources

- a. Photovoltaic Module Packaging, Interconnecers, and Reliability Verification (15)
- b. Improved Thin Film Materials, Modules, and Material Recovery (11)
- c. Innovative Reflector Materials and Designs for Concentrating Solar Power Systems (14)
- d. Non-Rotating Drilling for Geothermal Energy Development (2)

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

32. Advanced Motors, Power Electronics, and Sensors and Controls

- a. Advanced Motors (10)
- b. Advanced High Temperature Power Electronics and Controls (26)
- c. Advanced Power Electronics for Improved Illumination (8)
- d. Sensors and Controls (32)

33. Energy Efficient Membranes

- a. Membrane Materials with Improved Properties (10)
- b. Membranes for Separations of Biobased Products (5)
- c. Hydrogen Production (6)
- d. Industrial Membrane Process Systems (9)

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Fusion Energy Sciences ($7 M)**

34. Advanced Technologies and Materials for Fusion Energy Systems
35. Fusion Science and Technology
36. High Energy Density Physics for Inertial Fusion Energy

**High Energy Physics ($18.5 M)**

37. Accelerator Technology for the International Linear Collider
38. Advanced Concepts and Technology for High Energy Accelerators
39. Radio Frequency Accelerator Technology for High Energy Accelerators and Colliders
40. High-Field Superconductor and Superconducting Magnet Technologies for High Energy Particle Colliders
41. High Energy Physics Detectors
42. High Energy Physics Data Acquisition and Processing

# SBIR/STTR FY 2006
# TECHNICAL TOPICS (cont'd)

**Advanced Scientific Computing Research ($6.3 M)**

43. High-Performance Computing
44. High-Performance Networks
45. High-Performance Middleware and Distributed Systems Technologies

**Nuclear Physics ($9.2 M)**

46. Nuclear Physics Software and Data Management
47. Nuclear Physics Electronics Design and Fabrication
48. Nuclear Physics Accelerator Technology
49. Nuclear Physics Particle and Radiation Detection Systems, Instrumentation and Techniques

# Schedule – Remainder of 2006

- 1387 Phase I applications received (262 SBIR awards; 29 STTR awards)
  - 309 applications declined during First Step Evaluation
  - 195 declined during first step evaluation were non-responsive to the technical topic
- April 13, 2006 – Phase I Award selection
- April 17, 2006 – Deadline for Phase II applications from previous year
- July 5, 2006* – Phase II winners announced
- June 28, 2006 – Phase I Awards expected to begin
- August 7, 2006 – Phase II Awards expected to begin
- September 2006* – FY 2007 Phase I Funding Notice published
- December 2006* – Phase I Deadline

* dates subject to change.

# PHASE I CYCLE

- **PREPARE TECHNICAL TOPICS – SPRING**
  - **SEND TOPIC SUGGESTIONS TO SBIR-STTR@SCIENCE.DOE.GOV**
- **RELEASE OF PHASE I FUNDING NOTICE – FALL**
  - **GO TO WWW.SCIENCE.DOE.GOV/SBIR**
- **INTERACTION WITH TOPIC AUTHORS (E-MAIL/BE BRIEF!!)**
- **PROPOSAL DEADLINE – ~3 MONTHS POST PUBLISHED NOTICE**
- **PHASE I AWARD SELECTION – 4 MONTHS POST DEADLINE**
- **PHASE I AWARDS BEGIN – ~6 MONTHS POST DEADLINE**

# PHASE I EVALUATION PROCESS

- ADMINISTRATIVE REVIEW
- FIRST STEP REVIEW
- EXTERNAL PEER REVIEW
- SCORING/RANKING
- AWARD SELECTION
- NEGOTIATIONS
- FORMAL AWARDS
- DEBRIEFINGS

# REASONS FOR FIRST STEP DECLINATIONS

- **Is the application responsive to the technical topic and subtopic?**
- **Is it for research or research and development?**
- **Does the application duplicate work that has already been funded?**
- **Does the application provide enough information to conduct further review?**
- **Is their a conflict of interest with respect to topic preparation?**
- **Does this application stand a reasonable chance of being funded compared to other applications received in the same topic/subtopic?**

# DOE SBIR/STTR EVALUATION CRITERIA Phases I and II

1. **Strength of the Scientific/Technical Approach**
   *To what extent does the proposed work build upon or move beyond the current state-of-the-art? How new or unique is the idea? How significant is the scientific and/or technical challenge? Is a breakthrough possible? Has the applicant demonstrated knowledge of the subject? How thoroughly have the concepts been presented?*

2. **Ability to Carry out the Project in a Cost Effective Manner**
   *Please comment on the qualifications of the Principal Investigator (PI), other key staff, and consultants, if any, and on the level of adequacy of equipment and facilities*

3. **Impact**
   *Please comment on the significance of the technical and/or economic benefits of the proposed work, if successful. Please comment on the likelihood that the proposed work could lead to a marketable product or process, and on the size of the potential market. Please comment on the likelihood that the project will attract further development funding (from private sector sources or from Federal, non-SBIR/STTR sources) after the SBIR/STTR project expires.*

Evidence of Commercial Potential (Phase II Only)

# CURRENT SUCCESS RATES

| | SBIR | STTR |
|---|---|---|
| Phase I | 1 out of 5 | 1 out of 8 |
| Phase II | 1 out of 2 | 1 out of 2 |

# INTERESTING TIDBITS

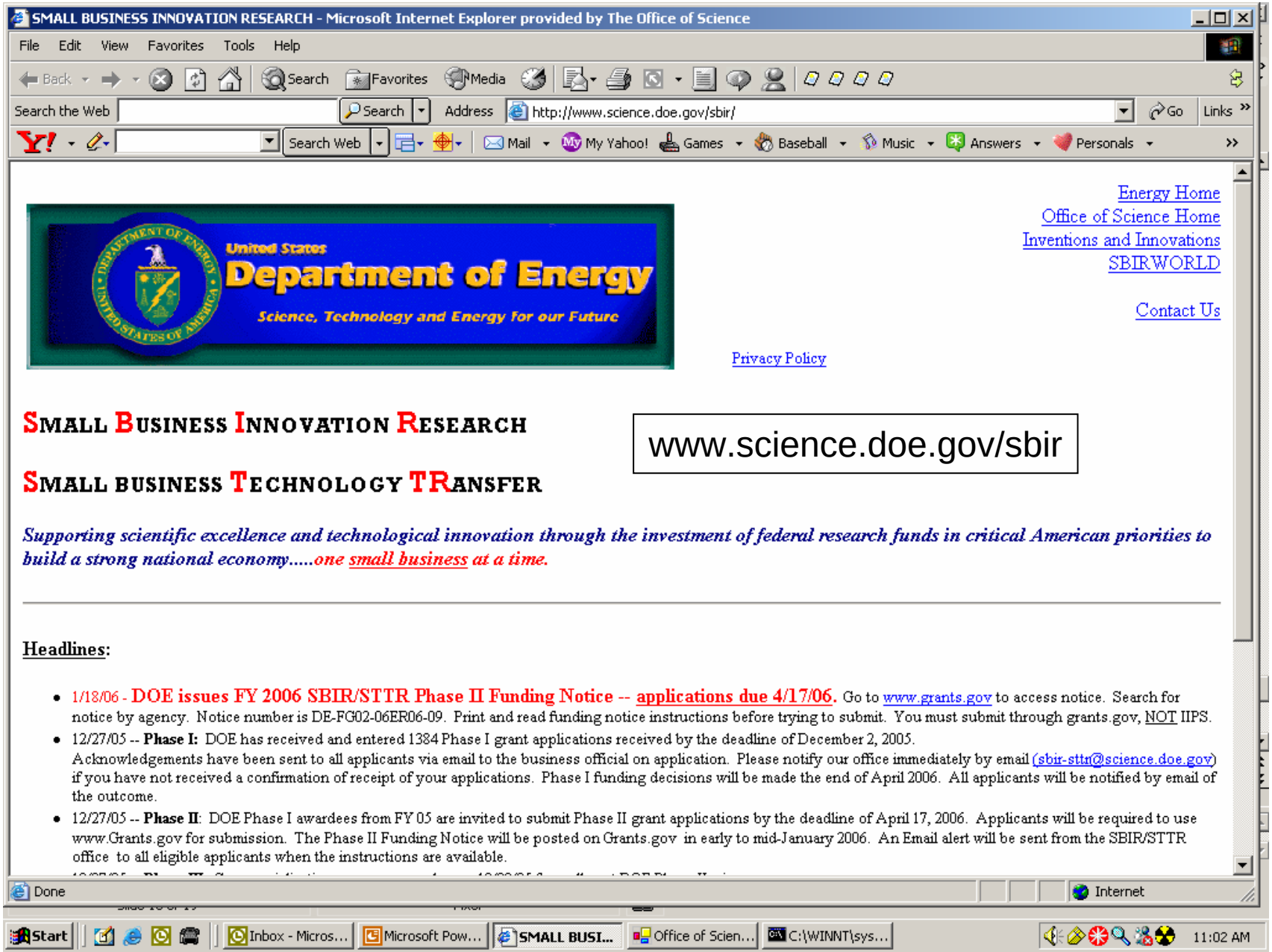
**FY 2006 Phase I**

- **291 awards to 193 companies. Of those, 72 were first time winners with DOE.**
- **38 of the 72 first time winners were first time applicants to DOE.**
- **61 of the 291 winning proposals had a PI that did not have a Ph.D.**
- **Awards made in 33 states.**

# COMMERCIALIZATION ASSISTANCE PROGRAMS

- Business Plan Assistance & Opportunity Forum (PII)
- Trail Blazer (Phase I)
- Technology Niche Analysis (mid-Phase II)
- Virtual Deal Simulator (pilot – Phase II)

Point of Contact: Larry James (larry.james@science.doe.gov)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Headlines:
1/18/06 - DOE issues FY 2006 SBIR/STTR Phase II Funding Notice -- applications due 4/17/06. Go to www.grants.gov to access notice. Search for notice by agency. Notice number is DE-FG02-06ER06-09. Print and read funding notice instructions before trying to submit. You must submit through grants.gov, NOT IIPS.
12/27/05 -- Phase I: DOE has received and entered 1384 Phase I grant applications received by the deadline of December 2, 2005. Acknowledgements have been sent to all applicants via email to the business official on application. Please notify our office immediately by email (sbir-sttr@science.doe.gov) if you have not received a confirmation of receipt of your applications. Phase I funding decisions will be made the end of April 2006. All applicants will be notified by email of the outcome.
12/27/05 -- Phase II: DOE Phase I awardees from FY 05 are invited to submit Phase II grant applications by the deadline of April 17, 2006. Applicants will be required to use www.Grants.gov for submission. The Phase II Funding Notice will be posted on Grants.gov in early to mid-January 2006. An Email alert will be sent from the SBIR/STTR office to all eligible applicants when the instructions are available.
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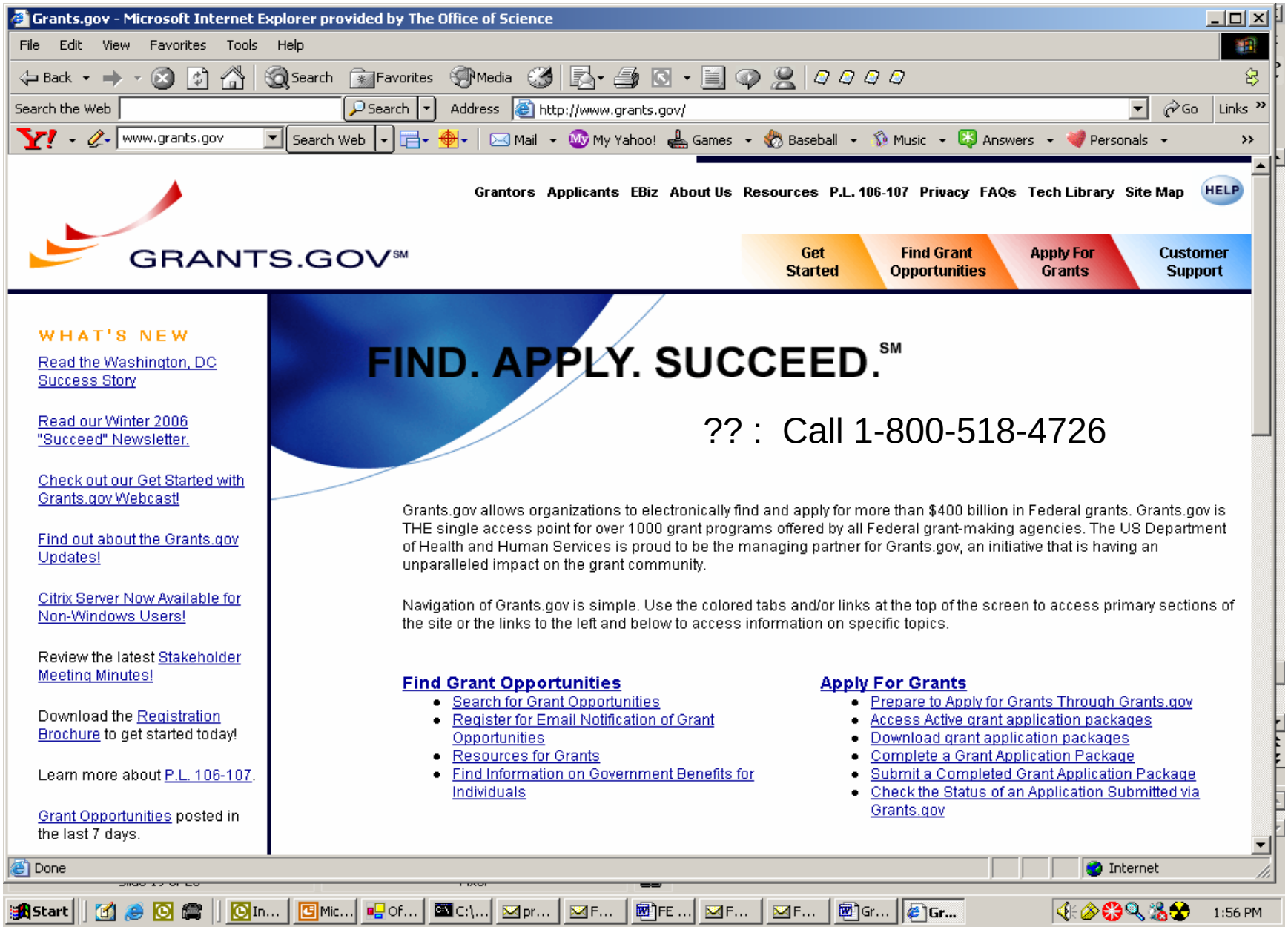
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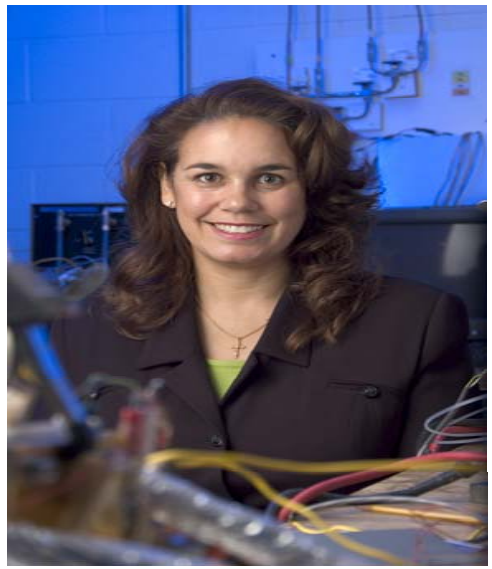
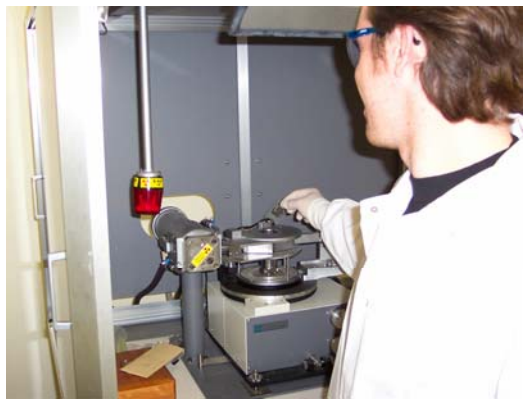
# T/J Technologies
# Ann Arbor, MI

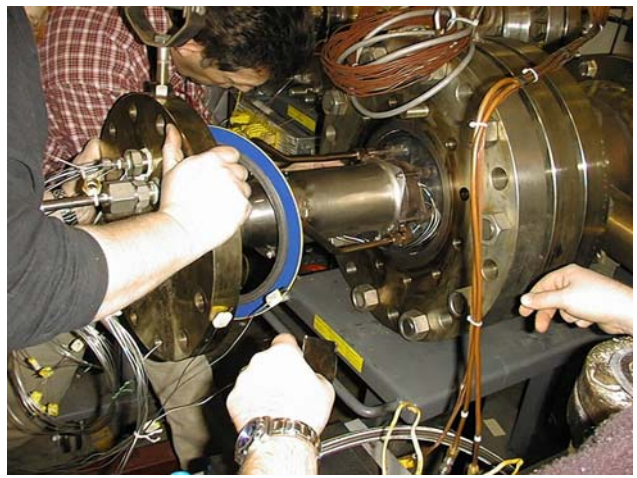
- **Founded in 1991**
- **Develop nanomaterials for advanced stored energy devices and systems.**
- **Named one of “top tech” firms in Michigan**
- **Leader in stored energy market**
- **Spin-off products include large format, secondary lithium-ion batteries for HEVs, lithium-ion batteries for naval air weaponry, and long-life secondary batteries for robotic space probes**
- **Since 2003, quadrupled annual contract awards.**





# Precision Combustion, Inc. (PCI)
# North Haven, CT

- **Co-founded in 1986**
- **Develop advanced catalytic reactors.**
- **World leader in gas turbine catalytic combustor technology.**
- **2001, shifted focus toward hydrogen and syngas.**
- **Recently received $15 million in added governmental and private development support and sales.**



# DOE SBIR/STTR PROGRAM CONTACT INFORMATION

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